

**WHAT IS CLAIMED IS:**

1. Apparatus for efficiently transmitting data in a plurality of different protocols in a managed bandwidth environment, comprising:

5                   a central hub or node for communicating data to a plurality of stations in a TCP or UDP data format, means for formatting all data in a TCP format,

                  means for prioritizing the TCP formatted data for transmission to one or more of said plurality of stations,

                  means for designating TCP formatted data for conversion to UDP formatted data,

                  means for converting said designated TCP formatted data into UDP formatted data, and

                  means for transmitting TCP formatted data and UDP formatted data to said plurality of stations in a point-to-point broadcast mode or in a point-to-multipoint broadcast mode to efficiently utilize the bandwidth of said transmitter and to avoid duplication of transmission of the same data.

2. Apparatus as set forth in Claim 1 wherein said means for converting TCP formatted data into UDP formatted data comprises computing means for reading and storing TCP formatted data and for creating UDP formatted data from the stored data.

3. Apparatus as set forth in Claim 2 wherein said means for reading and storing said TCP formatted data comprises means for reading the total length of bytes to be included in said UDP formatted data.

4. Apparatus as set forth in Claim 3 wherein said means for reading and storing said TCP formatted data comprises means for reading and storing a plurality of TCP formatted data frames, and

5                said means for converting comprises converting a plurality of TCP formatted data frames into a single UDP data frame.

5. Apparatus as set forth in Claim 4 wherein said means for converting comprises means for generating a UDP length of data and a checksum for the UDP formatted data.

6. Apparatus as set forth in Claim 2 wherein said means for reading and storing TCP formatted data includes means for recognizing predetermined data employed to flag TCP formatted data to be converted to UDP formatted data.

7. Apparatus as set forth in Claim 2 wherein said means for reading and storing TCP formatted data further includes means for replacing a destination IP address with a network destination IP address.

8. Apparatus as set forth in Claim 7 wherein said destination IP address is read from the destination IP address field of an IP header and converted into a subset destination IP address of predetermined ground stations.

9. Apparatus as set forth in Claim 8 wherein said hub or node for communicating data comprises means for receiving radar image data and text data to be formatted into a TCP format.

10. Apparatus as set forth in Claim 9 wherein said radar image data comprises Synthetic Aperture Radar (SAR) images and Moving Target Indicator (MTI) images.

11. Apparatus as set forth in Claim 1 wherein said plurality of ground station comprise means for receiving TCP and UDP formatted data.

12. A method for efficiently transmitting data in a plurality of different protocols in a managed bandwidth environment, comprising the steps of:

assimilating image data and text data at a  
5 central hub or node for efficient dissemination to a plurality of ground stations,

formatting all data to be disseminated in a TCP format,

10 passing said TCP formatted data through a bandwidth flow control system to determine priority of transmission to said ground stations,

prioritizing the TCP formatted data to be passed through said bandwidth flow control system,

15 designating in said TCP formatted data the TCP formatted data to be converted to UDP formatted data,

converting the designated TCP formatted data to UDP formatted data, and

transmitting TCP formatted data and UDP formatted data to said plurality of ground stations.

13. The method as set forth in Claim 12 which further includes controlling the flow of said TCP formatted data and said UDP formatted data by controlling the flow of said TCP formatted data before conversion to UDP formatted  
5 data.

14. The method as set forth in Claim 12 which further includes dynamically programming said flow control system.

15. The method as set forth in Claim 12 which further includes transmitting data from said ground stations to said central hub or node to enable said central hub to dynamically program said flow control system.

16. A method of improving flow control of image data and text data in a point-to-multipoint data broadcasting system, comprising the steps of:

generating image data and text data at a central hub or node for efficient dissemination to a plurality of ground stations,

processing said image data and said text data at said central hub into the frames of TCP formatted data,

inserting conversion flags into some of said TCP formatted data,

passing said TCP formatted data through a bandwidth flow control system,

converting said TCP formatted data having conversion flags into UDP formatted data, and

broadcasting multi-broadcast UDP formatted data to said ground stations subject to flow control prioritization.

17. The method as set forth in Claim 16 wherein the step of inserting a conversion flag comprises placing a predetermined number in the header of said TCP formatted data.

18. The method as set forth in Claim 17 which further includes placing a predetermined port number in a port destination field of said TCP header.

19. The method as set forth in Claim 16 which further includes broadcasting TCP formatted data interspersed with UDP formatted data.

20. The method as set forth in Claim 16 which further includes the steps of:

monitoring the maximum data rate of reception at said ground stations,

5                   transmitting said maximum data rate of re-  
ception to said central hub, and

dynamically programming said flow control system.